Making Sure Sacred Sheep Don't Become Extinct

Animal geneticist Harvey D. Blackburn is responsible for collecting and storing thousands of samples of animal germplasm—mainly semen and embryos—to make sure there's enough genetic material to reintroduce a species if necessary. Much of his collection deals with important livestock such as Holstein cattle and Yorkshire pigs.

But one of the collections Blackburn, who is the coordinator of the animal section at ARS's National Center for Genetic Resources Preservation in Fort Collins, Colorado, is working on is likely not familiar to many Americans. He is trying to collect 6,000 units of semen from Navajo-Churro sheep, a breed culturally important to the Navajo tribe of the Southwest.

The breed was brought to this country 500 years ago by Spanish settlers, and Navajos have embraced and raised the breed since then. Over time, though, others convinced the tribe to raise different breeds, so Navajo-Churro numbers are dwindling.

This project is different from others Blackburn has worked on since the center accepted its first animal sample in 2000. "It's really a learning experience for us; it's a step beyond the biology, one in which we have to consider social implications," he explains.

To develop the collection, animal physiologist Phil Purdy, also of the Fort Collins center, traveled to the Navajo Nation to collect germplasm from rams owned by several Navajo sheep producers. Until Purdy developed relationships with various breeders, there was hesitancy in collaborating with ARS on this effort.

Before 1965, ARS scientists conducted research on the Navajo-Churro and found that the sheep did well in dry areas; they were able to produce more lambs than other breeds of sheep. Handspinners like the wool from Churro sheep, and they are willing to pay premium prices for it. Navajo use the wool to make blankets. But for industrial wool manufacturers, it has low value.

Blackburn has 1,200 semen samples now from 27 different rams. He hopes to get samples from at least 50 different males to get a broad sampling of genetic diversity.

If there were ever a need to totally regenerate the Navajo-Churro breed from the ARS collection, a backcrossing strategy could be used. In such a situation, Churro semen would be used to inseminate a ewe from a different sheep breed. The resulting offspring would be 50 percent Churro. The process would be repeated using a female offspring, making the next generation 75 percent Churro. They keep doing this until the sheep are 93 percent Churro.

The collection could also be used by breeders or researchers to introduce genetic variation into existing Churro populations.

At one time, there were 2 million of these sheep. In 1977, when conservation efforts started, there were fewer than 500. Now the estimates are around 1,500.—By **David Elstein,** ARS.

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Scientists at ARS are collecting thousands of units of semen from Navajo-Churro sheep like the one shown here. The goal is to preserve the germplasm from this breed, which is valued by the Navajo tribe of the Southwest because its wool is preferred by handspinners.